

**GAS PURIFICATION SYSTEM WITH AN INTEGRATED HYDROGEN
SORPTION AND FILTER ASSEMBLY**

ABSTRACT OF THE DISCLOSURE

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The present invention provides a gas purification system with improved efficiency, simpler construction, cost reductions, form factor improvements, and increased durability. The present invention provides cost and form factor improvements through fewer components overall and through utilizing multiple integrated 10 components. Prior art gas purification systems are more bulky and complicated. The present invention achieves increased thermal efficiency through utilization of a regenerative heat exchanger to recapture a portion of the heat energy transferred to the gas during the purification process. Prior art purifiers lacked a regenerative heat exchanger. The present invention integrates the two components into one integrated 15 heater and purification vessel assembly. The present invention integrates the two discrete components into one integrated hydrogen sorption and particle filter assembly. The integrated hydrogen sorption and particle filter assembly is also capable of operating at higher temperatures. This eases maintenance and manufacture. The resulting gas purification system is simpler through utilizing 20 fewer components, smaller by utilizing fewer and integrated components, and reduced cost through fewer components, smaller components and through reduced manufacture labor requirements.